PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Servicios Industriales y de Apoyo de la Laguna, S.A. de C.V.
(SIA Calibración)
Calzada Hacienda el Rosario # 4, Local 8, Residencial Hacienda el Rosario
Torreón, Coahuila, México. C.P. 27019

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system
(as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Dimensional, Mass, Force and Weighing Devices, Mechanical, Thermodynamic and Electrical Calibration
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
June 19, 2012	November 07, 2022	December 31, 2024
Revision Date:	*Accreditation No.:*	*Certificate No.:*
May 17, 2024	72789	L22-743-R2

Perry Johnson Laboratory Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com

Certificate of Accreditation: Supplement

Servicios Industriales y de Apoyo de la Laguna, S.A. de C.V.
(SIA Calibración)
Calzada Hacienda el Rosario # 4 Local 8, Residencial Hacienda el Rosario
Torreón, Coahuila, México. C.P. 27019
Contact: Carlos Armando Herrera Phone: 871-204-4033

Accreditation is granted to the facility to perform the following calibrations:

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Calipers[F]	1 mm to 610 mm	$(5.99 + 2.68 \times 10^{-2}L)$ µm	Block Gages 0 Mitutoyo JIS B7507
Micrometers[F]	1 mm to 610 mm	$(9.83 \times 10^{-1} + 1.67 \times 10^{-2}L)$ µm	Block Gages 0 Mitutoyo JIS B7502
Height Gages[F]	1 mm to 610 mm	$(5.99 + 2.68 \times 10^{-2}L)$ µm	Block Gages 0 Mitutoyo JIS B7517
Indicators[F]	1 mm to 25 mm	(5.78 + 0.8L) µm	Block Gages 0 Mitutoyo JIS B7503
Measurement Tapes[F]	1 000 mm to 30 000 mm	1.1 mm	Master Rule Mitutoyo Mod 183-304 (Res.= 0.5 mm) JIS B7512
Rules Error of Indication[F]	5 mm to 2 000 m	0.076 mm	Master Rule Mitutoyo Mod 183-304 (Res.= 0.5 mm) JIS B7516
Fixtures & Gages[F]	X= 1 mm to 700 mm Y= 1 mm to 1 000 mm Z= 1 mm to 600 mm	2.8 µm	CMM Mitutoyo ASME Y14.5 M
	X= 1 mm to 3 000 mm Y= 1 mm to 3 000 mm Z= 1 mm to 3 000 mm	0.043 mm	Faro Arm ASME Y14.5 M
	X= 1 mm to 3 000 mm Y= 1 mm to 3 000 mm Z= 1 mm to 3 000 mm	0.092 mm	Faro Scanner ASME Y14.5 M
Pin Gage[F]	0.01 mm to 25 mm	$(2.5 + 6.3 \times 10^{-2}L)$ µm	Micrometer ASME B 89 1.5 DIN 2269
Optical Comparator[F] X axis Linearity Y axis Linearity	250 mm	$(2 + 5 \times 10^{-3}L)$ µm	Glass Scale Gage Blocks JIS B 7184
Optical Comparator[F] Magnification	5X	0.05 % of magnification	
	10X	0.05 % of magnification	
	20X	0.05 % of magnification	

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Optical Comparator[F] Angularity	0° to 180°	0.83°	Glass Scale Gage Blocks, Protactor JIS B 7184
Microscope Magnification[F]	5X	2 µm	Glass Scale JIS B 7153
	10X	2.1 µm	
	20X	2.3 µm	
Articulated Arm Coordinate Measuring Machine (AACMM) Volumetric Performance[F]	Up to 3 650 mm	4 µm	Metrology Works Ball Bar ASME B89.4.22
Articulated Arm Coordinate Measuring Machine (AACMM) Effective Diameter[F]	Up to 25 mm	2 µm	Ceramic Test Sphere ASME B89.4.22
AACMM Length Measurement Error Unidirectional[F]	Up to 1 050 mm	3.3 µm	25 mm Ceramic Sphere Ball Bar 711 mm and 1 050 mm Bars ASME B89.4.22
	Up to 1 800 mm	4.1 µm	25 mm Ceramic Sphere Ball Bar 711 mm and 1800 mm Bars ASME B89.4.22
	Up to 2 420 mm	6.6 µm	25 mm Ceramic Sphere Ball Bar 711 mm and 2 500 mm Bars ASME B89.4.22
	Up to 3 080 mm	8.6 µm	25 mm Ceramic Sphere Ball Bar 711 mm and 3100 mm ars ASME B89.4.22
	Up to 3 650 mm	10 µm	25 mm Ceramic Sphere Ball Bar 711 mm and 3 800 mm Bars ASME B89.4.22

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Articulated Arm Coordinate Measuring Machine (AACMM) Optical Sensor[F]	Sphere Diameter: 25.4 mm	4 µm	Ball Bar with 2 Spheres of 25.4 mm and Ceramic Test Sphere of 25 mm ISO 10360-8
Thread Plug Gauge (Major Diameter)[FO]	4.76 mm to 107.95 mm (6-32 in to 4-1/4 in)	7.5 µm (295 µin)	Micrometer Mitutoyo, Mitutoyo Wire Set 313-101 ASME B1.2
Thread Plug Gauge (Pitch Diameter)[FO]	0.75 mm to 3 mm (0.03 in to 0.118 in)	7.5 µm (295 µin)	Micrometer Mitutoyo, Mitutoyo Wire Set 313-101 ASME B.1.16M
Feeler Gage[FO]	0.025 4 mm to 6.35 mm (0.001 in to 0.25 inch)	5.8 µm (228 µin)	Micrometer Mitutoyo JIS B 7524
Coating Thickness Gage Ferrous Base[FO]	0.075 mm to 1.5mm (0.003 in to 0.06 in)	0.89 µm (35 23 µin)	Coating Thickness Standard Comparison ASTM E376
Ultrasonic Thickness Gage[FO]	2.5 mm to 12.5 mm (0.000 98 in to 0.492 in)	25 µm (984 µin)	Defelsko Block Set Gage ASTM E797
Granite Table, Surface Plate Repeat Measurement Only[FO]	304 mm to 1 219 mm (12 in to 48 in)	1.4 µm (39 µin)	Repeat O Meter DIN 876
True Meter Length Meter Counter (Odometer)[FO]	Up to 1 000 m	0.062 m	Master Rule NIST Vol 102-6
Plain Ring Gages Class XX	165.35 mm to 300 mm	0.005 mm	Mitutoyo CMM ASME B89.1.6
Plain Ring Gages Class X	38.35 mm to 300 mm	0.005 mm	
Plain Ring Gages Class Y	20.96 mm to 300 mm	0.005 mm	
Plain Ring Gages Class Z and ZZ	2 mm to 300 mm	0.005mm	
Bore Gages[FO]	5 mm to 300 mm	0.004 6 mm	Mitutoyo CMM ASME B89.1.10M, JIS B-7503
Coating Thickness Gage[FO]	25 µm to 1 550 µm	1 µm	Coating Thickness Standard ASTM E376

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Mass, Force and Weighing Devices

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Balance[O]	4 mg to 200 g (Res.= 1 mg)	1.2 mg	Weight Set F1 OIML R-76
Balance[O]	1 g to 17 000 g (Res.= 0.001 g)	1.3 x 10^{-3} g	Weight Set F1 OIML R-76
	1 g to 10 000 g (Res.= 0.001 g)	2.1 x 10^{-3} g	Weight F2 OIML R-76
Precision Balances[O]	0.1 g to 6 000 g (Res.= 0.001 g)	1.3 x 10^{-3} g	Weight Set E2 OIML R-76
	1 mg to 17 000 g (Res.= 1 mg)	1.3 x 10^{-3} g	Weight Set F1 OIML R-76
Scales[O]	100 g to 20 000 g (Res.= 1 mg)	0.12 g	
	10 kg to 100 kg (Res.= 0.5 g)	0.56 g	
	1 kg to 1 000 kg (Res.= 0.1 g)	130 g	
	1 kg to 10 000 kg (Res.= 1 kg)	1.2 kg	
	20 kg to 40 kg (Res.= 0.001 kg)	1.1 g	Weight Set M1 OIML R-76
	40 kg to 100 kg (Res.= 0.002 kg)	2.3 g	
	100 kg to 200 kg (Res.= 0.005 kg)	5.5 g	
	200 kg to 400 kg (Res.= 0.01 kg)	10 g	
	400 kg to 500 kg (Res.= 0.02 kg)	21g	
	500 kg to 1 000 kg (Res.= 0.05 kg)	130 g	
	1 000 kg to 1 500 kg (Res.= 0.1 kg)	130 g	
	1 500 kg to 2 000 kg (Res.= 0.2 kg)	140 g	
	2 000 kg to 2 500 kg (Res.= 0.2 kg)	200 g	
	2 500 kg to 4 000 kg (Res.= 0.2 kg)	210 g	
	4 000 kg to 5 000 kg (Res.= 0.2 kg)	230 g	

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Scales[O]	5 000 kg to 10 000 kg (Res.= 1 kg)	1.2 kg	Weight Set M2 OIML R-76
	10 000 kg to 20 000 kg (Res.= 1 kg)	1.2 kg	
	20 000 kg to 40 000 kg (Res.= 2 kg)	1.8 kg	
	40 000 kg to 50 000 kg (Res.= 4.0 kg)	2.5 kg	
	50 000 kg to 75 000 kg (Res.= 4.6 kg)	2.9 kg	
Weights M1, M2, M3[F]	1 g	0.16 mg	Weight set F1, Mettler Toledo Analytical Balance OIML R111 ABBA Methodology
	2 g	0.2 mg	
	5 g	0.32 mg	
	10 g	0.4 mg	
	20 g	0.6 mg	
	50 g	0.75 mg	
	100 g	1.2 mg	
	200 g	2.2 mg	
	500 g	2.7 mg	Weight Set F1, Kern Analytical Balance OIML R111 ABBA Methodology
Weights M1, M2, M3[F]	1 000 g	5.4 mg	Weight Set F1 AND Analytical Balance OIML R111 ABBA Methodology
	2 000 g	10 mg	
	5 000 g	27 mg	
	10 000 g	54 mg	
	20 000 g	100 mg	Weight Set F1, Radwag Analytical Balance OIML R111 ABBA Methodology:
Weight F2[F]	10 kg	17 mg	Weight Set F1, Analytical Balance OIML R111 ABBA Methodology
Force Machines Tension and Compression[FO]	98.06 N to 960.6 N	0.95 % of reading	Load Cell PT400 220 lbs Type S, ISO-7500-1

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Force Measurement Instrument - Tension and Compression[FO]	196.13 N to 3 336 N	0.95 % of reading	Load Cell PT400 750 lbs Type S ISO-7500-1
Force Measurement Instruments - Tension and Compression[F]	0.49 N to 98.06 N	0.78 % of reading	Class F1 Weight NMX-CH-376-IMNC
	98.06 N to 960.6 N	11 % of reading	Class M1 Weight NMX-CH-376-IMNC
	196.13 N to 3 336 N	11 % of reading	

Thermodynamic

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Thermohygrometer (Temperature Only)[F]	0 °C to 45 °C	0.19 °C	Thermohygrometer Chamber ASTM E 104-02 Euramet cg-20 See 01
Hygrometer[F]	10 % RH to 90 % RH	1 % RH	
Humidity Tester[F]	10 % RH to 90 % RH	1 % RH	
Humidity Chamber[F]	10 % RH to 90 % RH	1 % RH	
Temperature-Generation Ovens Furnaces, Muffles and Freezers, Chambers, Hot Rooms, Cold Rooms and Thermocouple Type K[FO]	-50 ºC to 1 200 ºC	1.7 ºC	Comparison Fluke 744 with Thermocouple type K CEM TH-003
Infrared Thermometer[FO]	30 ºC to 500 ºC	1.4 ºC	Fluke 66 Black Body CENAM Technical Guide
Bimetallic Thermometer[FO]	-10 °C to 500 °C	0.47 °C	Comparison Fluke 744 with RTD (pt 100), Dry Well CENAM Technical Guide
Temperature Measurement Thermocouple Type K and J	-10 °C to 500 °C	0.47 °C	

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Pressure Gages[FO]	3 psi to 30 psi	0.12 psi	Druck Model DPI 603 ASME B40.100
	30 psi to 300 psi	0.12 psi	

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Pressure Gages[FO]	300 psi to 3 000 psi	0.34 psi	Fluke Pressure Module Model 700P29 ASME B40.100
	3 000 psi to 10 000 psi	0.95 psi	Digital Manometer Fluke 700G31 ASME B40.100
Vacuum Meters[FO]	-10 psi to 3 psi	0.58 psi	Druck Model DPI 603 OIML R-101
Differential Pressure[FO]	0.357 inH_2O to 150 inH_2O (88.92 Pa to 37 363.34 Pa)	0.2 H_2O (50 Pa)	Fluke 754/ Fluke 744/ Druck Model DPI603 ASME B40.100
Pressure Transmitter[FO]	3 psi to 30 psi	0.12 psi	Fluke 754/ Fluke 744/ Druck Model DPI603 ASME B40.100
	30 psi to 300 psi	0.12 psi	
	300 psi to 3 000 psi	0.34 psi	Fluke Pressure Module Model 700P29 NOM-013-SCFI/OIML R110
	3 000 psi to 10 000 psi	0.95 psi	Digital Manometer Fluke Model 700G31 NOM-013-SCFI / OIML R109
Torque Tools: (Dial Wrench, Click Wrench, Digital Wrench & Torque Screwdriver)	33.9 N·m to 339 N·m	0.98 % of reading	Mountz Load Cell LTT 250F 6789-1/6789-2 UNE-EN ISO 6789
	2.82 N·m to 28.24 N·m	0.98 % of reading	Mountz Load Cell LTT 250F / Load Cell BMX 250i 6789-1/6789-2 UNE-EN ISO 6789
	0.282 N·m to 2.825 N·m	0.98 % of reading	Mountz Load Cell LTT 250F / Load Cell BMX 25i 6789-1/6789-2 UNE-EN ISO 6789

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Equipment to Measure DC Resistance[FO]	1 mΩ to 11 Ω	0.05 % of reading + 50 mΩ	Fluke 744/754 Bench Multimeter 8 ½ Digits EA-10/15/ NOM-127 –SCFI
	11 Ω to 110 Ω	0.05 % of reading + 50 mΩ	
	110 Ω to 1.1 kΩ	0.05 % of reading + 500 mΩ	
	1.1 kΩ to 11 kΩ	0.1 % of reading + 10 Ω	
	0.5 Ω to 20 Ω	0.015 % of reading + 404 mΩ	
	20 Ω to 200 Ω	0.012 % of reading + 45 mΩ	
	200 Ω to 2 kΩ	0.01 % of reading + 3 mΩ	
	2 kΩ to 20 kΩ	0.01 % of reading + 3 Ω	
	20 kΩ to 200 kΩ	0.012 % of reading + 3 Ω	
	200 kΩ to 2 000 kΩ	0.03 % of reading + 3 Ω	
	2 000 kΩ to 20 MΩ	0.05 % of reading + 4 Ω	
	0.5 Ω to 20 Ω	0.015 % of reading + 404 mΩ	Fluke 8842A EA-10/15/ NOM-127 –SCFI
	20 Ω to 200 Ω	0.012 % of reading + 45 mΩ	
Equipment to Measure DC Resistance[FO]	200 Ω to 2 kΩ	0.01 % of reading + 3 mΩ	
	2 kΩ to 20 kΩ	0.01 % of reading + 3 Ω	
	20 kΩ to 200 kΩ	0.012 % of reading + 3 Ω	
	200 kΩ to 2 000 kΩ	0.03 % of reading + 3 Ω	
	2 000 kΩ to 20 MΩ	0.05 % of reading + 4 Ω	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type B[FO]	- 600°C to 1 820 °C	0.52 ºC	Fluke 754/ Fluke 744B Electrical Simulation of Thermocouple Output ASTM E220
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type C[FO]	0 ºC to 2 316 ºC	0.97 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type E[FO]	250 ºC to 900 ºC	0.26 ºC	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J[FO]	-210 °C to 1 200 °C	0.28 ºC	

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Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K^{FO}	100 ºC to 1 200 ºC	0.33 ºC	Fluke 754/ Fluke 744B Electrical Simulation of Thermocouple Output ASTM E220
	-270 °C to 1 372 °C	0.4 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type L^{FO}	-200 °C to 900 °C	0.32 ºC	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type N^{FO}	200 ºC to 1 300 ºC	0.33 ºC	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type R^{FO}	200 ºC to 1 767 ºC	0.66 ºC	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type S^{FO}	-20 °C to 1 767 °C	0.57 ºC	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T^{FO}	-250 °C to 400 °C	0.21 ºC	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type U^{FO}	-200 °C to 600 °C	0.33 ºC	
Temperature Calibration, Indication, and Control Equipment used with RTD Pt 385, 100 Ω^{FO}	-200 °C to 800 °C	0.28 ºC	Fluke 754/ Fluke 744B Electrical Simulation of RTD Output ASTM E644-11
Temperature Calibration, Indication, and Control Equipment used with RTD Pt 385, 200 Ω^{FO}	-200 °C to 600 °C	0.19 ºC	
Temperature Calibration, Indication, and Control Equipment used with RTD Pt 385, 500 Ω^{FO}	-200 °C to 630 °C	0.15 ºC	

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Temperature Calibration, Indication, and Control Equipment used with RTD Pt 385, 1 000 Ω^{FO}	-200 °C to 630 °C	0.14 ºC	Fluke 754/ Fluke 744B Electrical Simulation of RTD Output ASTM E644-11
Temperature Calibration, Indication, and Control Equipment used with RTD Pt 3 916, 100 Ω^{FO}	-200 °C to 630 °C	0.16 ºC	
Temperature Calibration, Indication, and Control Equipment used with RTD Pt 3 926, 100 Ω^{FO}	-200 °C to 630 °C	0.18 ºC	
Temperature Calibration, Indication, and Control Equipment used with RTD Cu 427, 10 Ω^{FO}	-100 °C to 260 °C	0.36 ºC	
Temperature Calibration, Indication, and Control Equipment used with RTD Ni 672, 120 Ω^{FO}	-80 °C to 260 °C	0.16 ºC	Fluke 754/ Fluke 744B Electrical Simulation of RTD Output ASTM E644-11
Equipment to Measure DC Voltage^{FO}	1.1 mV to 20 mV	0.013 % of reading + 0.004 mV	Fluke 744/754 Bench Multimeter 8 ½ Digits EA-10/15 Nom-127–SCFI
	20 mV to 200 mV	0.01 % of reading + 0.04 mV	
	200 mV to 2 V	0.005 % of reading + 3 mV	
	2 V to 20 V	0.006 % of reading + 3 V	
	20 V to 200 V	0.006 % of reading + 3 V	
	200 V to 1 000 V	0.007 % of reading + 3V	
	1.1 mV to 20 mV	0.013 % of reading + 0.004 mV	Fluke 8842A EA-10/15 Nom-127–SCFI
	20 mV to 200 mV	0.01 % of reading + 0.04 mV	
	200 mV to 2 V	0.005 % of reading + 3 mV	
	2 V to 20 V	0.006 % of reading + 3 V	
	20 V to 200 V	0.006 % of reading + 3 V	
	200 V to 1 000 V	0.007 % of reading + 3V	
	1 V to 1 000 V	1 % of reading + 5 V	Fluke 376 EA-10/15 Nom-127–SCFI

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MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 744/754 EA-10/15 Nom-127–SCFI
20 Hz to 40 Hz	1 mV to 1.1 V	2 % of reading + 10 mV	
40 Hz to 500Hz	1 mV to 1.1 V	0.05 % of reading + 5 mV	
500 Hz to 1kHz	1 mV to 1.1 V	2 % of reading + 10 mV	
1 kHz to 5 kHz	1 mV to 1.1 V	10 % of reading + 20 mV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			
20 Hz to 40 Hz	1.1 V to 11 V	2 % of reading + 10 mV	
40 Hz to 500 Hz	1.1 V to 11 V	0.05 % of reading + 5 mV	
500 Hz to 1kHz	1.1 V to 11 V	2 % of reading + 10 mV	
1 kHz to 5 kHz	1.1 V to 11 V	10 % of reading + 20 mV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 744/754 EA-10/15 Nom-127–SCFI
20 Hz to 40 Hz	11 V to 110 V	2 % of reading + 10 mV	
40 Hz to 500Hz	11 V to 110 V	0.05 % of reading + 5 mV	
500 Hz to 1kHz	11 V to 110 V	2 % of reading + 10 mV	
1 kHz to 5 kHz	11 V to 110 V	10 % of reading + 20 mV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 744/754 Bench Multimeter 8 ½ Digits EA-10/15 Nom -127-SCFI
20 Hz to 45 Hz	1.1 mV to 200 mV	1.2 % of reading + 0.01 mV	
45 Hz to 200 Hz	1.1 mV to 200 mV	0.5 % of reading + 0.01 mV	
200 Hz to 20 kHz	1.1 mV to 200 mV	0.2 % of reading + 0.01 mV	
20 kHz to 50 kHz	1.1 mV to 200 mV	0.25 % of reading + 0.025 mV	
20 kHz to 100 kHz	1.1 mV to 200 mV	0.5 % of reading + 0.05 mV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 744/754 EA-10/15 Nom-127–SCFI
20 Hz to 40 Hz	11 V to 110 V	2 % of reading + 10 mV	
40 Hz to 500Hz	11 V to 110 V	0.05 % of reading + 5 mV	
500 Hz to 1kHz	11 V to 110 V	2 % of reading + 10 mV	
1 kHz to 5 kHz	11 V to 110 V	10 % of reading + 20 mV	

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(SIA Calibración)
Calzada Hacienda el Rosario #4 Local 8, Residencial Hacienda el Rosario
Torreón, Coahuila, México. C.P. 27019
Contact: Carlos Armando Herrera Phone: 871-204-4033

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Electrical

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Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 744/754 Bench Multimeter 8 ½ Digits EA-10/15 Nom -127-SCFI
20 Hz to 40 Hz	110 V to 300 V	2 % of reading + 10 mV	
40 Hz to 500 Hz	110 V to 300 V	0.05 % of reading + 5 mV	
500 Hz to 1 kHz	110 V to 300 V	2 % of reading + 10 mV	
1 kHz to 5 kHz	110 V to 300 V	10 % of reading + 20 mV	
20 Hz to 500 Hz	1 V to 1 000 V	1.5 % of reading + 5 V	
Equipment to Measure AC Voltage At the listed frequencies[FO] 20 Hz to 500 Hz	1 V to 1 000 V	1.5 % of reading + 5 V	Fluke 376 EA-10/15 NOM-127–SCFI
Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 8842A Bench Multimeter 8 ½ Digits EA-10/15 NOM-127–SCFI
20 Hz to 45 Hz	200 mV to 2 V	1.2 % of reading + 0.1 mV	
45 Hz to 200 Hz	200 mV to 2 V	0.5 % of reading + 0.1 mV	
20 Hz to 20 kHz	200 mV to 2 V	0.2 % of reading + 0.1 mV	
20 kHz to 50 kHz	200 mV to 2 V	0.25 % of reading + 0.25 mV	
20 kHz to 100 kHz	200 mV to 2 V	0.5 % of reading + 0.5 mV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 8842A EA-10/15/ NOM-127–SCFI
20 Hz to 45 Hz	2 V to 200 V	1.2 % of reading + 1 mV	
45 Hz to 200 Hz	2 V to 200 V	0.5 % of reading + 1 mV	
20 Hz to 20 kHz	2 V to 200 V	0.2 % of reading + 1 mV	
20 kHz to 50 kHz	2 V to 200 V	0.25 % of reading + 2.5 mV	
20 kHz to 100 kHz	2 V to 200 V	0.5 % of reading + 5 mV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			
20 Hz to 45 Hz	200 V to 750 V	1.2 % of reading + 1 V	
45 Hz to 200 Hz	200 V to 750 V	0.5 % of reading + 1 V	
20 Hz to 20 kHz	200 V to 750 V	0.2 % of reading + 1 V	

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Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 8842A EA-10/15/ NOM-127–SCFI
20 kHz to 50 kHz	200 V to 750 V	0.25 % of reading + 2.5 V	
20 kHz to 100 kHz	200 V to 750 V	0.5 % of reading + 5 V	
Equipment to Measure DC Current[FO]	0.5 mA to 200 mA	0.08 % of reading + 0.04 mA	Fluke 744/754 Bench Multimeter 8 ½ Digits EA-10/15 NOM-127–SCFI
	200 mA to 2 000 mA	0.08 % of reading + 0.02 mA	
	2 000 mA to 20 000 mA	0.15 % of reading + 0.4 mA	
	0.5 mA to 200 mA	0.08 % of reading + 0.04 mA	Fluke 8842A EA-10/15 NOM-127–SCFI
	200 mA to 2 000 mA	0.08 % of reading + 0.02 mA	
	2 000 mA to 20 000 mA	0.15 % of reading + 0.4 mA	
	1 A to 999.9 A	2 % of reading + 5 A	Fluke 376 EA-10/15 Nom-127–SCFI
Equipment to Measure AC Current At the listed frequencies 20 Hz to 5 kHz[FO]	0.5 mA to 200 mA	3 % of reading + 0.003 mA	Fluke 744/754 Bench Multimeter 8 ½ Digits EA-10/15 NOM-127–SCFI
	200 mA to 2 000 mA	0.7 % of reading + 0.03 mA	
	2 000 mA to 20 000 mA	0.6 % of reading + 0.3 mA	
	20 000 mA to 400 A	2.6 % of reading + 0.4mA	
	0.5 mA to 200 mA	3 % of reading + 0.003 mA	Fluke 8842A EA-10/15 NOM-127-SCFI
	200 mA to 2000 mA	0.7 % of reading + 0.03 mA	
	2 000 mA to 20 000 mA	0.6 % of reading + 0.3 mA	
Equipment to Measure AC Current At the listed frequencies 20 Hz to 5 kHz[FO]	20 000 mA to 400 A	2.6 % of reading + 5.3 A	Fluke 8842A EA-10/15 NOM-127-SCFI
	1 A to 999.9 A	2 % of reading + 5 A	Fluke 376 EA-10/15 NOM-127–SCFI
Equipment to Measure Frequency[FO]	20 Hz to 45 Hz	0.3 Hz	Fluke 744/754 Bench Multimeter 8 ½ Digits EA-10/15 NOM-127 –SCFI
	45 Hz to 20 kHz	0.3 Hz	
	20 kHz to 50 kHz	1.5 Hz	
	20 Hz to 45 Hz	0.3 Hz	Fluke 8842A EA-10/15 NOM-127–SCFI
	45 Hz to 20 kHz	0.3 Hz	
	20 kHz to 50 kHz	1.5 Hz	

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Equipment to Output DC Voltage[F]	10 V to 40 kV	2 % of reading	Fluke 80K40 CEM EL- 010
Equipment to Output AC Voltage At the listed frequencies[FO]			Fluke 80K40 CEM EL- 010
20 Hz to 40 Hz	750 V to 40 kV	5 % of reading	
40 Hz to 500 Hz	750 V to 40 kV	5 % of reading	
500 Hz to 1 kHz	750 V to 40 kV	5 % of reading	
1 kHz to 5 kHz	750 V to 40 kV	5 % of reading	
Equipment to Measure and Generate Capacitance[FO]	1 nF	0.5 % of reading + 0.005 nF	Keysight Multimeter 34460A Euramet_cg-15
	10 nF	0.4 % of reading + 0.001 nF	
	100 nF	0.4 % of reading + 0.1 nF	
	1 µF	0.4 % of reading + 0.001 µF	
	10 µF	0.4 % of reading + 0.01 µF	
	100 µF	0.4 % of reading + 0.1 µF	
Equipment to Measure Inductance[FO]	1 µH to 999.999 mH	0.04 % of reading a 1 kHz	Decade of inductance LS 400L CEM-EL-002

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor *k* (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer[F] would mean that the laboratory performs this calibration at its fixed location.

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4. The presence of a superscript O means that the laboratory performs calibration of the indicated parameter onsite at customer locations. Example: Outside Micrometer^{O} would mean that the laboratory performs this calibration onsite at the customer's location.
5. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.
6. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.
7. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.